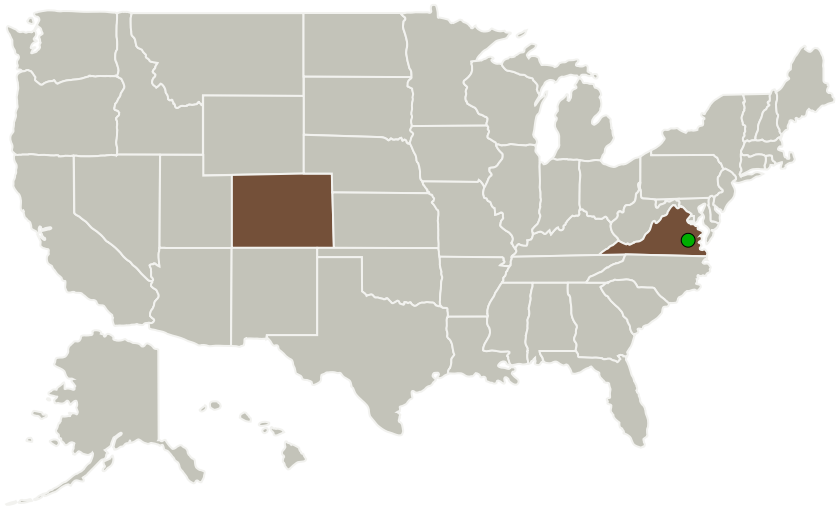
Multifunction Lidar for Air Data and Kinetic Air Hazard Measurement, Phase I

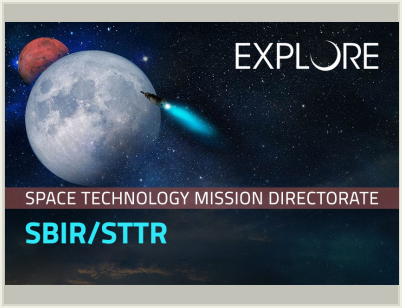
Completed Technology Project (2011 - 2011)

Project Introduction

Ophir proposes to develop a multifunction, low-cost lidar capable of accurately measuring kinetic air hazards, and air data, simultaneously. The innovation is providing a single sensor that has dual-use functionality ⬲ air data measurement and kinetic air hazard detection in a package that is easily integrated onto commercial aircraft. Conventional air data systems provide critical information to the aircraft for safe flight, but there are vulnerabilities, as evidenced by the recent Air France accident. A more robust air data system for flight controls on aircraft is needed ⬲ particularly to measure airspeed in icing and severe weather conditions. This proposed sensor also measures air hazards which impacts the safety of air traffic and smoothness of ride; decreases fuel consumption and incidence of encounters with turbulent events on aircraft. The Phase I effort entails the system requirements determination, determination of optimal dual-use sensor, prototype design, range and accuracy expectations for each of the lidar modes, and preliminary design of the Phase II prototype. This technology is a TRL 2 with the intent of reaching TRL 3 by the end of this program. Phase II consists of a sensor demonstration in a representative flight environment (TRL 5).

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Ophir Corporation	Lead Organization	Industry	
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Colorado	Virginia

Project Transitions

February 2011: Project Start

August 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140156)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Ophir Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Loren M Caldwell

Co-Investigator:

Loren M Caldwell

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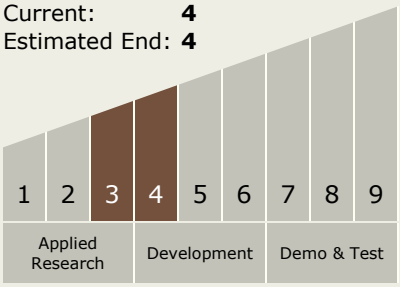
Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.11 Engine Icing

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System